

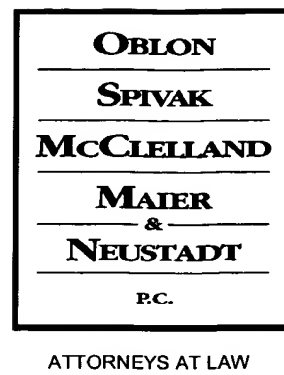


image

1756

Docket No.: 210159US0CONT

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313



RE: Application Serial No.: 09/919,846
Applicants: Takashi OHNO, et al.
Filing Date: August 2, 2001
For: OPTICAL INFORMATION RECORDING MEDIUM
AND OPTICAL RECORDING METHOD
Group Art Unit: 1756
Examiner: J. MARTIN

SIR:

Attached hereto for filing are the following papers:

Declaration Under 37 C.F.R. §1.132 (5 pp., executed)

Our check in the amount of **\$0.00** is attached covering any required fees. In the event any variance exists between the amount enclosed and the Patent Office charges for filing the above-noted documents, including any fees required under 37 C.F.R. 1.136 for any necessary Extension of Time to make the filing of the attached documents timely, please charge or credit the difference to our Deposit Account No. 15-0030. Further, if these papers are not considered timely filed, then a petition is hereby made under 37 C.F.R. 1.136 for the necessary extension of time. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Norman F. Oblon

Registration No. 24,618

Customer Number

22850

(703) 413-3000 (phone)
(703) 413-2220 (fax)

Corwin P. Umbach, Ph.D.
Registration No. 40,211

IN THE UNITED STATES PATENT & TRADEMARK OFFICE



IN RE APPLICATION OF :

TAKASHI OHNO, ET AL. : EXAMINER: ANGEBRANDT, MARTIN J.

SERIAL NO: 09/919,846 :

FILED: AUGUT 2, 2001 : GROUP ART UNIT: 1756

FOR: OPTICAL INFORMATION RECORDING MEDIUM AND OPTICAL
RECORDING METHOD:

DECLARATION UNDER 37 CFR 1.132

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

Now comes Takashi Ohno who deposes and says that:

1. I am one of the joint inventors of the above-identified application.
2. I graduated from Faculty of Science, Tohoku University, Graduate School of Science, Department of Physics, in 1989, and have been in the employ of Mitsubishi Chemical Corporation since 1989 and have been on loan to Mitsubishi Kagaku Media Co., Ltd. New Products Strategy Center since 2003 as Dept. 1 Manager and engaged in research and development of optical information recording media for more than 14 years.
3. I have worked on the following experiments.

Additional Comparative Examples 1 and 2

(1) Preparation of optical information recording media

Optical information recording media A and B having the following layer structures were prepared. The layer structures are the same as that of Example 5 in the specification except for the recording layer composition.

	Optical information recording medium A	Optical information recording medium B
Substrate	Polycarbonate substrate	Polycarbonate substrate
Protective layer	$(\text{ZnS})_{80}(\text{SiO}_2)_{20}$ 230 nm	$(\text{ZnS})_{80}(\text{SiO}_2)_{20}$ 230 nm
Recording layer	$(\text{Sb}_{0.7}\text{Te}_{0.3})_{0.9}\text{Zn}_{0.1}$ 20 nm	$(\text{Sb}_{0.8}\text{Te}_{0.2})_{0.9}\text{Zn}_{0.1}$ 20 nm
Protective layer	$(\text{ZnS})_{80}(\text{SiO}_2)_{20}$ 20 nm	$(\text{ZnS})_{80}(\text{SiO}_2)_{20}$ 20 nm
Reflective layer	$\text{Al}_{97.5}\text{Ta}_{2.5}$ 200 nm	$\text{Al}_{97.5}\text{Ta}_{2.5}$ 200 nm
Ultraviolet ray-curable resin layer	4 μm	4 μm

(2) Initialization (initial crystallization) of the optical information recording media

The optical information recording media A and B were subjected to melt initialization under the same conditions as in Example 5 ^(*) except that the long axis of the elliptic irradiation beam was 1.5 times longer (75 μm), and the laser power was increased by about 1.5 times from 250 mW to 380 mW to offset the longer axis of the elliptic irradiation beam and thereby make the laser power density about the same as that in Example 5, whereby initial crystallization of both optical information recording media A and B was carried out.

*1) The initialization conditions in Example 5

linear velocity:	4.5 m/s
beam-transferring speed:	5 $\mu\text{m}/\text{rotation}$
laser power:	250 mW
<hr/>	
long axis of the elliptic irradiation beam: 50 μm .	

(2) Formation of recorded marks

On the initialized optical information recording media A and B, EFM signal recording was carried out by means of an optical disk evaluation apparatus (laser wavelength: 780 nm, NA: 0.5) under the same conditions as in Example 5. However, the crystallization rates of the recording layers of the optical information recording media A and B were so high, it was impossible to form amorphous recorded marks under the same conditions as in Example 5.

Next, EFM signal recording (clock period: $T = 9.6 \text{ nsec}$) was tried again under different recording conditions, namely, at a linear velocity of 28.8 m/s, by applying writing power P_w (28 mW) and bias power (0.5 mW) in such a manner that when the time for applying writing power P_w is represented by $\alpha_1 T, \alpha_2 T, \dots, \alpha_m T$, and the time for applying bias power P_b is represented by $\beta_1 T, \beta_2 T, \dots, \beta_m T$ (wherein $1 \leq i \leq m$, and $\alpha_1, \alpha_2, \dots, \alpha_m$, and $\beta_1, \beta_2, \dots, \beta_m$ are defined in Table A), the laser application period is divided into m pulses in a sequence of $\alpha_1 T, \beta_1 T, \alpha_2 T, \beta_2 T, \dots, \alpha_i T, \beta_i T, \dots, \alpha_m T, \beta_m T$ to form amorphous mark portions having a length nT ($n = 3$ to 11), and by applying erasing power P_e (7 mW) to form crystallized inter-mark portions.

Under the new recording conditions, EFM random signals were recorded on the optical information recording medium A (i.e., amorphous recorded marks were formed), while it was impossible to record signals on the optical information recording medium B. Therefore, only the optical information recording medium A was tested for archival stability of recorded amorphous marks.

Table A

Mark length	m	α_1	β_1	α_2	β_2	α_3	β_3	α_4	β_4	α_5	β_5
3T	1	2.10	0.55								
4T	2	1.00	1.00	1.05	0.3						
5T	2	1.00	1.40	1.45	0.30						
6T	3	1.00	1.00	1.00	0.90	1.05	0.3				
7T	3	1.00	1.35	1.00	1.00	1.4	0.3				
8T	4	1.00	1.00	1.00	1.00	1.00	0.90	1.05	0.3		
9T	4	1.00	1.35	1.00	1.00	1.00	1.00	1.4	0.3		
10T	5	1.00	1.00	1.00	1.00	1.00	1.00	1	0.9	1.05	0.3
11T	5	1.00	1.35	1.00	1.00	1.00	1.00	1.00	1.00	1.4	0.3

(4) Archival stability of recorded amorphous marks

After the optical information recording medium A was left for 100 hours in an environment in which the temperature was 80°C and the relative humidity was 80%, the recorded signals had disappeared.

4. The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with ~~the knowledge that willful false statements and the like so made are punishable~~ by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

5. Further declarant saith not.

3 / Oct. / 2003

Date

Takashi Ohno

Takashi Ohno